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ABSTRACT

Uniformity, and thus internationalization, of concepts and terms in special-purpose languages is desirable for reducing language barriers in the transfer of scientific and technological information. This is important for both industrialized nations and countries with small economies. Training of skilled personnel in developing nations has always encountered linguistic obstacles. Eugen Wuster's General Theory of Terminology can be used as a framework for forming and standardizing terms and for aiding countries in establishing firm language policies for their adoption. The theory proposes that the unification of subject vocabularies has to be carried out at several levels, including: concepts and concept systems, definitions and other descriptions of concepts, the internal form of terms, and the external form (spelling and pronunciation). The theory also asserts that specific methods of concept and term formation must be accepted, as well as applied to internationally approved term components. A corpus of those components has been prepared, using roots and affixes similar to available expressions in national languages, in three languages developed by the International Federation of National Standardization Associates, and in other related languages. The completion of this work, resulting in an international terminology, will benefit international subject-area communication. (MSE)

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W. Nedobity

Introduction

Terminology is the only area in which the efforts of international unification of special languages can be carried out effectively. The use of planned languages, however, in the fields of science and technology has not met with the necessary success because there was a considerable lack of pertinent terminologies.

Advantages of an international terminology

The advantages of a unification and thus an internationalization of concepts and terms are quite obvious: the understanding of subject specialists can be improved because a reading knowledge of technical texts in a foreign language can be easily acquired; the number of mistakes made in the translation of texts can be reduced tremendously because the problems of faux amis etc. can be eliminated. As a further consequence, technology and information transfer would no longer be hampered by communication barriers.

Technology transfer is a matter of great importance to countries with small economies. When they try to establish priorities for economic and scientific development they look for models in the Western countries. As a matter of policy they have to decide how much science and technology they should develop and produce by their own efforts and how much should be imported. Developing countries usually realize that time is actually the scarcest resource when seeking to close the knowledge gap and to ease the lacking of general welfare and therefore they tend towards fast transfer of technology from other countries.

This transfer of technology is also of great relevance to many industrialized nations because it opens new markets for products which are available everywhere in the Western World. Thus it should be their main interest to see that there are no obstacles which hamper the transfer of knowledge and technology. Therefore it is not surprising that many international organizations have set up program and agencies which serve this purpose. For instance, the Industrial Development Board of Unido reiterated the high priority that it attaches to the development and transfer of technology to developing countries and the effective contribution that international action in that area could make to the industrialization of developing countries. In that context, it stressed the particular significance of the work of Unido in transferring appropriate and advanced technologies to developing countries.

During recent years there have been also strong voices both in the United Nations and in Unesco for the establishment of a new international information order which will make it possible to eliminate the widening gap between the developed and the developing countries. The value of such an information program should not be underestimated because the developing countries have to follow the industrialized countries in setting up documentation centres which hold all major primary and secondary publications in science and technology since

these contain most of the publicly available information resulting from research in the industrial countries. Technology transfer without the accompanying information and training activities cannot be prosperous in the long run.

Many developing countries purchase patents and know-how through consultants or encourage multinational companies to set up licenced companies or genuine branches of their firms in the country in the vain hope that the advanced technology they use will generate local innovations and thus assure a technological leap for the country. But in fact the real key to successful technology transfer and a genuine improvement of the standard of living is the training of local personnel. This is certainly a most difficult task but the prize is worth the effort. If the industrial nations of our times are willing to make this effort, they can accomplish more than any previous generation: they will hand over the knowledge which is necessary to handle the new technology effectively and wisely.

Unfortunately, the current practice is still far away from the ideal as a current report of the International Development Research Centre states: "As a rule, suppliers of technology do not train manpower unless contracts call for it. Training is usually requested in either: (1) very sophisticated technologies that are new to the country or (2) highly capital-intensive technologies involving a large amount of risk. Diffusion of these types of technology in expansion of the sector is quite limited.

Training of key skilled personnel was undertaken in the case of new and very sophisticated technologies but very seldom were the "trainers" trained of a set of directions framed for their usage. In former times the main obstacle to training native technologists used to be illiteracy but nowadays these obstacles have become more complex - they are economic, political and always linguistic in nature.

As regards the linguistic obstacles, terminology plays a major rule in overcoming technical communication barriers. If a language lacks the necessary subject vocabularies, technological knowledge cannot be disseminated in this language and the speakers of this language become discriminated because they have to learn a foreign language which is a long term process and delays development. Therefore terminological training is a prerequisite for any technical training and for the handling of technical information.

Important aspects of the General Theory of Terminology regarding international terminology

Terminology as a science explores the meaning of special languages. It has developed specific methods and principles for this purpose. Most of these principles are derived from logic, in particular from conceptology and epistomology. Generally speaking, one can say that the principal problem of information science is that of knowing how meaning is obtained from or injected into a text. To solve this problem it appears that one must have a detailed understanding of what a meaning is and what its properties are. In special languages meanings are formulated by means of concepts and conveyed to others by means of terms. Concepts again refer to objects of the inner or outer world. Individual objects can be concrete as a table or as abstract as the pain one perceives. Concepts can refer not only to things and events but also to properties and relations. A concept, however, is only a mental construction derived from objects. In order to communicate that mental construction, a symbol is assigned to the concept that represents it, usually a term in technical communication.

The General Theory of Terminology, which was founded by Eugen Wüster, is a very appropriate basis for practical terminology work. It is of interest to both subject specialists and teachers of special languages. For this reason, Infoterm disseminates this theory and encourages specialists

in various countries to translate its basic texts into the language of the country concerned and to elaborate the section of terms including term formation and term elements for the language concerned. Among these basic texts are also the methodological standards issued by ISO/TC 37. These ISO specifications have to be supplemented by national standards which focus on the particularities of a language or subject field. The standardization of terminologies can also be a substantial aid to language development for technology transfer. The terminological co-operation between technology exporting and importing countries can best be organized in international standardizing committees where the unification of concepts should be a priority. The formation of terms, however, is the reponsibility of national committees which are a necessity for each country interested in technology transfer. The motivation for coining terms should not be governed by purely commercial considerations and has to follow certain rules which are in conformity with the structure of the language. Otherwise there is the danger that firm-and product-specific terminology develops instead of generally accepted terminology. An example of product-specific terminology is the fact that a certain part of an IBM typewriter was designated as "golfball", a term which does not reflect the essential characteristics of the concept in question and which was therefore not rendered into other national languages. The same problem has existed in pharmacy since decades where proprietory names have been used in juxaposition with non-proprietory names. Such a situation makes the terminological control more difficult and requires the compilation of appropriate works of reference. Transferring this situation to the field of commerce again one has to postulate that the terminology of a warehouse catalogue should not differ from that of customs regulations.

The formation of terms can be facilitated by building up an inventory of native term elements each reflecting a certain characteristic that could occur in a concept.

Eugen Wüster has compiled such an inventory for international elements mainly of Greek and Latin origin (see below).

The formation of international terms offers certainly a number of advantages to technology transfer but in developing countries there are usually sociological barriers which hamper the overall acceptance of such terms. Therefore it is inevitable that the governments of such countries decide on a clear-cut language planning policy and establish an appropriate infrastructure for it. Such an infrastructure should also contain terminology courses within the respective education system, in particular at university and postgraduate level. Infoterm supports these activities by providing advice and teaching material. A decisive step in this direction was made by the publication of a terminology manual by Helmut Felber which can be used as a textbook for training courses.

Principles for the formation of international terminology

One of the essential principles that *Eugen Wüster* laid down in regard to the unification of subject vocabularies is that this act of language regulation has to be carried out at several levels concerning

(1) the concepts and concept systems;

(2) the definitions and other descriptions of concepts;

(3) the internal form of terms;

(4) the external form of terms, i. e. their spelling and pronunciation.

For each level unified principles have to be applied which means that certain methods of concept formation and term formation have to become accepted internationally. Furthermore it is of equal importance to use the same quarry of elements

for this purpose. *Eugen Wüster* has started to collect internationally understandable term elements to serve as the raw material for scientific term formation. The models for this undertaking had already been developed a century ago in the fields of botany, zoology, medicine, etc. They are all very familiar to us as the nomenclatures based on the Greek and Latin languages. *Wüster* wanted to transfer their basic structure also to other disciplines and arrived at an abundance of common roots and affixes by comparing the European national languages. He named his project "The key to international terminology". This work has to be viewed in close connection with his development of a General Theory of Terminology. One possible way of implementing this project on a worldwide scale was the use of standardization. It was *Eugen Wüster* who gave the impetus to the preparation of ISO Recommendation 860 "International unification of concepts and terms" which came out in 1968.

Concepts and concepts systems

Concepts are mental representations of individual objects. A concept may represent only one individual object or - by abstraction - comprise a set of individual objects having certain qualities in common. It serves as a means for mental ordering (classification) and with the aid of a linguistic symbol (term, letter, graphical symbol) for communication. The concept is therefore an element of thinking.

Concepts may be the mental representation not only of beings or things (as expressed by nouns), but, in a wider sense, also of qualities (as expressed by adjectives or nouns), of actions (as expressed by verbs or nouns), and even of locations, situations or relations (as expressed by adverbs, prepositions, conjunctions or nouns).

Furthermore a concept may arise from the combination of other concepts, even without regard to reality. The number of con-

cepts (represented by terms) which may be combined to form a new concept (term) is limited by the fact that in a proposition a concept can only be either subject or predicate, but cannot comprise both. The best way for the unification of concepts is the establishment of unified systems of concepts.

Characteristics play an eminent role for concept systems. They determine the place of the individual concept in the system. Characteristics can be grouped to form "types of characteristics" which are the structuring elements and criteria of division of the systems. A given concept system depends on the selected types of characteristics. It should be stressed that the existence of several concept systems using different types of characteristics can be justified for a specific subject field. These concept systems, however, should be the same in the various national languages. In common language one comes frequently across an incongruity of concept systems. Comparing the names of colours within several languages it is to be noted that for some of them exact equivalents are missing in one or another language. The reason for this is the difference of the subdivision of the spectrum in the various languages. In special languages the concept *fr* "machine-outil" includes - as it is the case with *de* "Werkzeugmaschine" - all machines for cutting or forming any materials. The concept *en* "machine tool", however, which has the same literal meaning and is therefore generally equated to it, in reality designates a specific concept; i. e. only machines for cutting metals. Thus it contains an additional characteristic.

Definitions

A concept can be described either by a definition or explanation. If it is not possible in a certain case to provide a definition at least an explanation of the concept should be given. The definition is the key to any scientific work.

A definition is a description of a concept by means of other

known concepts, mostly in form of words and terms. It determines this concept in a system of other related concepts. An explanation is a description of a concept without considering its position in a system of concepts.

A definition usually consists of a specification of the characteristics of the concept to be defined, i. e. the description of the intension of the concept. For this purpose first the nearest genus that has either been defined already or can be expected to be generally known - not a generic concept of a higher level of abstraction - is found. Then the genus is restricted to the correct extension by its linking to characteristics, which differentiate the concept to be defined from other concepts of the same level of abstraction. These characteristics are called restricting characteristics. They have to be in line with the type of characteristics. This structure and the wording of definitions should be unified in multilingual vocabularies in order to dedect immediately if there are discrepancies in the number of characteristics. In certain projects they use a formalized way for this procedure.

In the Vocabulary of the International Electrotechnical Commission (IEC) care is taken not only of the determination of identical national concepts but also of the establishment of official definitions in English and French. Translation of such standard definitions should be introduced progressively into national standards.

Internal form of terms

Each language consists of thousands of word elements or morphemes. In addition there is a small number of term elements which have to be used for the designation of millions of concepts. This situation is handled by combining word elements in a number of ways and by meaning transfer.

The internal form of terms is their literal or basic meaning. For instance the widened end of a taper key has the following internal forms in the various languages:

en "head"
fr "talon" (internal form: heel)
de "Nase" (internal form: nose)

If it would be possible to agree in all languages on only one of these three internal forms (part of body), such a decision would make international understanding and translation work easier. A truely international form is "head" for the widened end of a screw which is designated in this way in all languages.

External form of terms

With a view to the external form of terms we can distinguish three types of international terms:

(1) terms such as "induction" in electrical engineering are spelled and pronounced differently in the various countries:

de Induktion (capitalized and with k)
fr induction
it indusione
ru indukcija

(2) the term "abies" which is part of the international nomenclature for botany is the Latin word for fur tree. It is spelled the same in all countries but pronounced differently. This type is very common in the fields of zoology, botany and medicine.

(3) terms such as "shunt" are pronounced and spelled the same way in all countries. They are the modern type of loan words from various national languages which are comparatively small in number.

The requirement of a unification of the spelling was already voiced by *Verkade* in his comments on the international nomenclature of organic chemistry which was adopted in 1930: chemists have to file thousands of international terms in alphabetical order. In spite of the fact that they are basically understandable by everyone, they cause problems because of slight spelling variants, e.g.: *fr* "étyl" versus *de* "Äthyl." There is still a lot of work to do for international standardization in this respect.

Affixes are also afflicted by this problem. Many of the national ideosyncrasies are due to the socalled phonetic spelling. The English affix "-ity" for instance such as in "formality" has the German counterpart "-ität" as well as the French "-ité" and the Italian "-ità". All these national derivations are based on the Latin prototype form "-itatem", later "-itate". A national form is at the same time international, if there are forms etymologically identical with it in several other languages; especially if all these forms are similar and if the languages belong to different families. Latin type forms are to be preferred to the internationalized ethnic forms, because they are more neutral and more consistent with the greater part of the other international terms. They are more appropriate to form derived and compound words. Foreign ethnic forms provoke the resistence of the language purists. The "Comité d'étude des termes techniques français" has suggested the replacement of the following loanwords from English with Latin type terms:

by-pass (technology of fluids) = deviation; dérivation
dope (chemical industry) = additif
feeder (electrical engineering) = artère; conduite de transport

A modern day example of unifying the external form of terms would be the alternative "Medical dictionary" by

Eschenbach which suggests the Latin type spelling also for the German speaking countries. An enterprise such as this will only be successful if it obtains the full support of the respective professional associations and as a second step of technical writers in general. For an individual researcher it takes a lot of courage and effort to promote such ideas.

Key to international terminology

Wüster laid down the seven most important characteristics of the key to terminology as follows:

(1) The key to terminology is designed to serve the needs of terminologists, not of philologists. It is to serve as a basis for the terminologies of the Romanic, Germanic, Slavic and other languages, even of the planned languages such as Esperanto.

(2) The term elements are to be ordered in the first place according to concepts, i. e. systematically, in the second place also alphabetically.

(3) The frequency of term elements has to be considered and registered. Thus an evaluation of synonyms is possible and also a selective use of the key. Consequently the key to terminology can be taught step by step.

(4) The term elements have to be spelled in the same way as it is done in Latin today. This way of spelling is preserved most accurately in French and English.

(5) The term elements have to be presented in a basic form (prototype form) which is free of any national variants. The prototype forms can be transformed into national forms in a systematic way.

(6) In order to be able to teach and practice the key to terminology, an internationally uniform pronunciation has to be assigned to the latinized prototype forms.

(7) International terms which are not Latin type terms are to be admitted to the key in an unaltered way as "ethnic type terms". They are to be pronounced as in their language of origin.

There are already hundreds of thousands of international terms available in the various subject vocabularies. Most of them are formed by combining roots and affixes. According to Wüster there are several thousands of international roots and a few dozen of international affixes available for this purpose. Only a small number of principles and guidelines is necessary to describe the procedure of term formation sufficiently. If one prepares a systematic schedule of the term elements (roots and affixes) as well as of the rules for their combination, one creates a key to international terminology. The purpose of such a key is to give the various subject specialists the opportunity to understand the meaning of international concepts by analyzing their inner form and to create new terms if required. This will promote the universal comprehensibility of subject communication among specialists from all over the world.

The first organizational step towards the preparation of principles for the international unification of technical vocabularies was taken in 1936 when the "International Federation of National Standardizing Associates (ISA)" established a technical committee for terminology (ISA 37). In 1938 this committee passed a resolution concerning the "International terminology of technology", also known as the "ISA-Code". I would like to quote two paragraphs from it:

c) Necessity of rules

It is deemed necessary to lay down uniform rules for the formation of code-words (...). These rules constitute at the same time a kind of "Key to Terminology" in regard to the already available international subject terminologies. It is intended to achieve with these rules the uniform, correct and

purpose-oriented formation of code-words in the various disciplines. They should not lead to a forced mixture of languages nor to a distortion of terms which are already almost international in nature.
The rules for the code have to be supplemented by a list of the most important roots and affixes which are to be the formation of code-words.

g) Sources for code-words

The code-words are to be very similar to the available technical expressions in the national languages, with special consideration of the three ISA-languages and related languages.

Before the Second World War the elaboration of the code-system has been in the hands of a small international subcommittee of ISA 37 in which Austria has made condsiderable contributions.

In 1946 ISA 37 was replaced by Technical Committee (TC) 37 of the International Organization for Standardization (ISO). In 1955 the secretariat of ISO/TC 37 submitted a draft of principles with the title "Principes pour l'unification internationale des notions et termes." This draft was mainly concerned with the unification of concepts and of the inner form of terms and served as a basis for the elaboration of ISO/R 860-1968 "International unification of concepts and terms" which is presently under revision. In regard to the ISA-Code, however, the work has not been continued within ISO or on another international level. Nevertheless the Austrian Standardizing Subcommittee "Terminologie Q" decided to follow the resolutions of ISA 37 and elaborated a "Wortstammliste" [list of roots] which was discussed in 13 sessions. The suggestions were all worked out by Prof. E. Wüster with the aid of Mr. Karl Janotta. The 500 selected concepts were taken from the following publication which contains 739 concepts: Helen S. Eaton. Comparative Frequency List. New York: IALA, 1934. Wüster labelled the roots listed as "crude forms". The final forms are still to be decided upon. In compliance with a decision of ISA 37, the entries were filed by UDC numbers.

Due to lack of time only the main divisions 5 to 9 could be covered completely, divisions 1 to 4 remained incomplete. In February 1951, the dictionary "Interlingua-English" was prepared by IALA which drew to a great extent on WÜster's elaborations so that he thought it necessary to deposit his own manuscript with a notary before the publication of the dictionary. Nevertheless this dictionary complies largely with WÜster's principles for crude forms of roots and can be used as a further basis for future work. International subject communication will certainly be facilitated by the creation of a key to international terminology. Even if it will not provide the immediate and precise understanding of concepts, which can only be achieved by definitions,

a tremendous mnemonic effect in the way that it uses familiar elements and combinations.

References

Eschenbach, K.-P. 1983. Wörterbuch der Medicin/Dictionary of Medicine. Neckarsulm: Jungjohann.

Felber, H. 1984. Terminology Manual. Paris: Unesco.

Gode, A. 1971. Interlingua - English Dictionary. New York: Ungar Publishing.

International Development Research Centre. 1983. Absorption and Diffusion of Imported Technology. Proceedings of a workshop held in Singapore, 26-30 January 1981. Ottawa: IDRC.

ISO. 1968. International Unification of Concepts and Terms. Genève: ISO (ISO/R 860-1968 (E)).

Nedobity, W. 1982. Key to International Terminology. In: Infoterm. Terminologies for the Eighties. With a Special Section: 10 Years of Infoterm. München, New York, London, Paris: K.G. Saur, pp. 239-257.

Tell, B. 1983. Information Consciousness and Knowledge Enhancement in the LDCs in View of a New International Information Order. International Forum on Information and Documentation 9.

UNIDO. 1984. Newsletter no. 195 (July).

Verkade, P.E. 1932. La révision recente de la nomenclature des combinaisons organiques. Recuell des travaux chimiques des pays-bas 51. 1959.

Wuster, E. Die internationale Angleichung der Fachausdrücke. Elektrotechnische Zeitschrift 16.